# COAL MINING

UNIVERSITY MICROFILMS
313 N 1st ST.
ANN ARBOR, MICH.

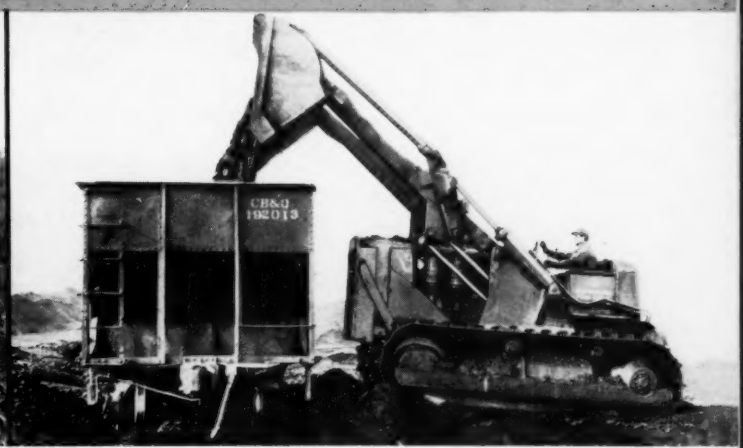
August, 1955

Volume 31, No. 8

NO DOUBT ABOUT IT...

EFFICIENT EQUIPMENT HOLDS THE KEY TO MINING PROFITS!
...AND HIGHWAY CAN MEET YOUR EVERY EQUIPMENT NEED!

Allis-Chalmers HD-15C operated by *Ralph Veon*, Darlington.



Allis-Chalmers HD-21C Tracto-Shovel loads coal into car.

Michigan Model 75-A Tractor Shovel loading coal from stockpile.

*Highway* **EQUIPMENT COMPANY**

6465 Hamilton Ave. • Pittsburgh 6, Pa.

Allis-Chalmers • International Vibro-Tampers • Jaeger
Power-Pack Conveyors • General Motors Diesel Engines
Gar Wood • Erie Bins • Master • Thor • Baker
Michigan Tractor Shovels and Excavator-Cranes
Lima Shovels, Cranes, Draglines

# Use the NEW M·S·A MinePhone

# to BOOST the EFFICIENCY of your EXISTING HAULAGE SYSTEM

A growing number of mine operators, faced with the problem of increased production "out-running" existing haulage facilities, are finding an economical solution in M·S·A MinePhone installations.

This modern communication system, redesigned and greatly improved, permits operators to *safely* step-up present haulage operations to handle increasing tonnage output and offset major investments for new haulage equipment at the same time.

Because the M·S·A MinePhone provides clear, instant two-way voice communication, all haulage decisions are made quickly. The dispatcher is always in contact with motormen, maintenance repair shops, loading points. Motormen can reply while trips are in motion—trips keep on the move, waits on sidings are minimized. Repair needs are relayed quickly. Over-all safety is improved because one message alerts all personnel at once.

We will be happy to supply you with complete details. Write or call.

**Here are the quality components of a single MinePhone Station**

(1) HEAVY-DUTY SPEAKER—made of weather-resistant cast aluminum. Volume control built into housing. (2) PRESS-TO-TALK MICROPHONE—high quality transmission; molded neoprene case; Koiled Kord for safety. (3) RECEIVER-TRANSMITTER—single unit, compact. "Squelch" control maintains quiet when not in use, eliminates background noise. Dust-tight steel housing with mounting cradle for quick installation. (4) RESISTOR BOX—reduces trolley wire DC power to requirements for station. (5) IN-LINE POWER FUSE—combination power cut-off and fuse. Waterproof, dust-tight, molded neoprene case houses a 600 volt 3 amp. fuse. All parts built for rugged, long-life service.

MSA
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*When you have a Safety problem, M.S.A. is at your service.*

# McCarthy COST CUTTING DRILLS BLAST HOLE DRILLS

**TRUCK-MOUNTED HORIZONTAL**

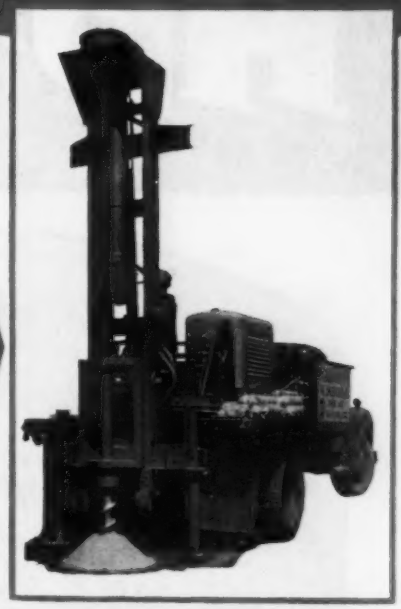
● Satisfied customer reports, "I drill so many more feet per minute with my McCarthy than I did with my old jet rig that I quickly recovered the low initial purchase cost."

**VERTICAL DRILL**

● . . . Ohio River Colliery Company. "We drilled 8-inch holes 100 feet deep in only 40 minutes! This permitted us to change our shooting patterns, saving hundreds of dollars weekly in cost of explosives."

**SELF-PROPELLED HORIZONTAL**

● A New Castle, Pa., operator reports boring "840 ft. of various depth, holes through shale and sandstone, in one working day." Bores 6" and 8" diameter holes at rate of 6' per minute maximum.



## Heavy Rugged Powerful

## COAL RECOVERY DRILL

● Robert B. Cleghorn, Jr., Hodgeville, West Virginia, reports his hydraulical, self-moving 42" McCarthy Coal Recovery Drill mines "up to 500 tons of clean, low-cost quality coal per day." Cleghorn has a three-man crew—operates in pits as narrow as 34 feet. Operator has total vision, including the highwall. Model 12 handles 24' augers from 16" to 48" in diameter.

● Other McCarthy Coal Recovery Drills handle augers 4', 6' and 12' in length.

MANUFACTURED BY

# THE SALEM TOOL CO.


Published monthly by Bassett Press & Mailing Company, Publication Office — Bassett Press & Mailing Co., 377 McKee Place, Pittsburgh 13, Pa. Executive Publisher P. F. JASIK, 4575 Country Club Drive, Pittsburgh, Pa. Price: in the United States, $2.00; all other countries $5.00. Single copy 50 cents. SECOND CLASS mail privileges authorized at Pittsburgh, Pennsylvania.

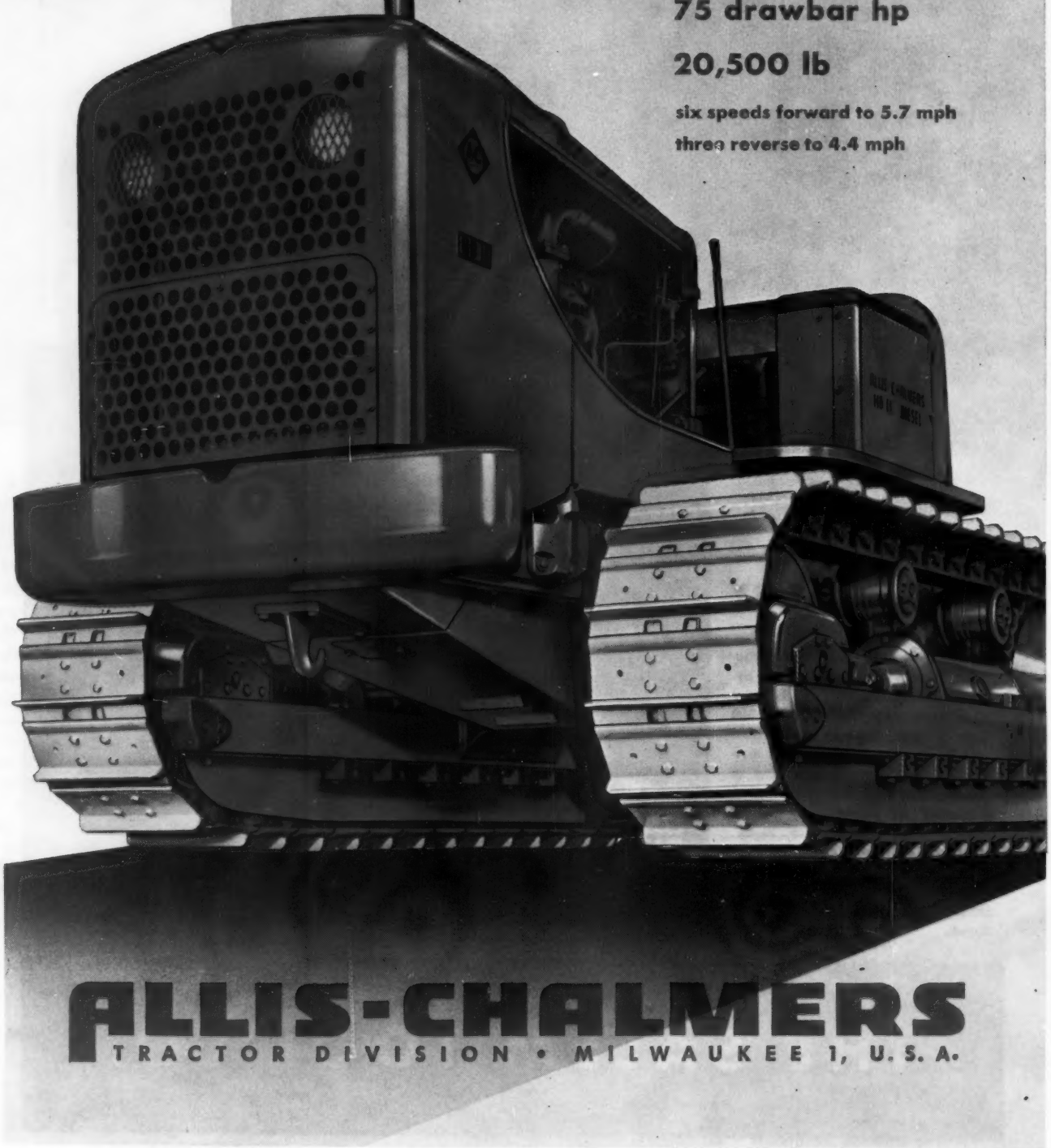
# HD-11

**90 net engine hp**

**75 drawbar hp**

**20,500 lb**

six speeds forward to 5.7 mph
three reverse to 4.4 mph



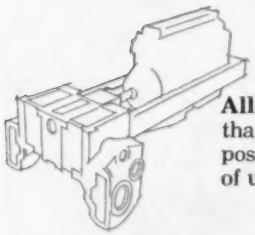
**ALLIS-CHALMERS**

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

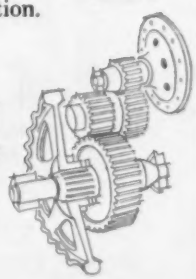
## Allis-Chalmers presents the new

# ANOTHER BIG STEP AHEAD IN LOW-COST DIRT MOVING

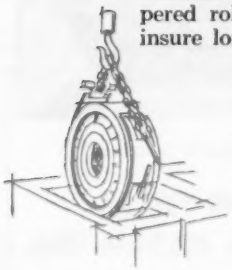
**. . . with all the important performance advantages of Allis-Chalmers advanced basic design . . . tested and proved over millions of operating hours!**



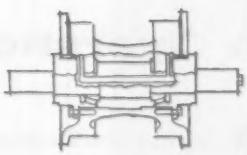
**All-Steel Box-A Main Frame** that soaks up shock loads, makes possible the service simplicity of unit construction.



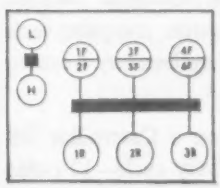
**Exclusive One-Piece Steering Clutch and Final Drive Housing** with all final drive gears straddle-mounted on tapered roller bearings to insure long life.



**Unit Construction** lets you remove engine, master clutch, transmission, steering clutches and final drives without disturbing adjacent parts.

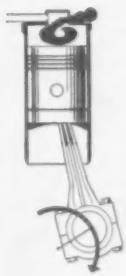


**1,000-Hour Lubrication Intervals** for roller bearing truck wheels, idlers and support rollers . . . makes production time out of service time.

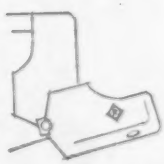


**Dual-Range Constant-Mesh Transmission** lets you go from any forward speed to any reverse speed by shifting only one lever. Eliminates double shifting! That means faster work cycles . . . more production!

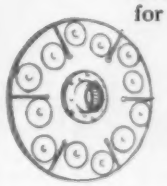
**plus . . . these great new features:**



**New Allis-Chalmers Diesel Engine** with "follow-through" combustion and tornado turbulence . . . for smooth engine performance, cleaner combustion, extra long engine life.



**New Wrap-Around Radiator Guard** used as dozer lift frame to simplify design, reduce cost of bulldozer; guard tilts forward for easy service.



**New Master Clutch with Ceramic Lining** sets new standards of clutch life . . . with fewer adjustments required.

**New Operator Convenience** including roomy, flat platform . . . foam rubber seat . . . 24-volt direct electric starting . . . 60-gal. fuel tank.

**Tough New Track** — New design, through-hardened with extra toughness for long life even in severe abrasive conditions.

**PLUS** . . . new, all-weather cooling; independent radiator-core mounting; new strength and capacity in final drive gears, shafts and bearings.

**NEW STANDARDS OF PERFORMANCE AND LONG LIFE ON A WIDE RANGE OF JOBS**

**You owe it to yourself to investigate the performance advantages of the HD-11 . . . newest addition to the Allis-Chalmers leadership line. See your nearby Allis-Chalmers dealer now.**

Model 8-C Austin Overshot Loader loading rock in Colorado quarry.

# Load 12 cubic yards per minute with an Austin Overshot Loader

AUSTIN DIVISION
Central Ohio Steel Products Company
Galion, Ohio • Denver, Colorado

*Ask your Caterpillar-Austin Dealer for a demonstration*

Austin Overshot Loaders move material overhead, from loading point to haulage units, in one fast, straight-line movement. Because they waste no time twisting or turning, Austins complete each loading cycle in just 20 seconds—make 3 full cycles every working minute!

A Model 8-C Austin Loader, mounted on a Caterpillar D8 Tractor, moves 4 cubic yards of material every cycle—12 cubic yards each minute!

Cut costs . . . boost your production . . . use Austins to load trucks, wagons, railcars—to mix or stockpile—to excavate. Or, use Austin job-tested attachments on your Loader to bulldoze, screen raw materials, or load logs and other items.

Austin Overshot Loaders are now available in five models, for installation on Caterpillar D2, D4, D6, D7 and D8 Tractors. Bucket capacities from 1 to 4 cubic yards. AA-1408

# COAL MINING

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Helical and Worm Gears for Joy 14BU Loaders

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unconditionally guaranteed

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Grooved Pipe Coupling Plain End Pipe Coupling

Manufactured in All Pipe Sizes
Stock Carried in Pittsburgh

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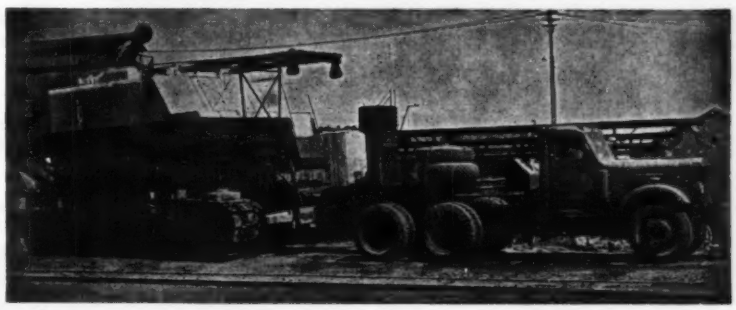
P. F. JASIK,
Publisher and Editor



**MOVERS** OF COAL STRIPPING AND CONTRACTOR'S EQUIPMENT



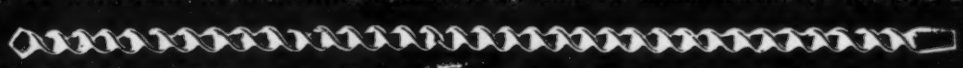
**HEAVY HAULING • RIGGING**

**MOORE-FLESHER HAULING CO.**

MOVERS of Coal Stripping and Contractor's Equipment
Preble & Adams Sts., North Side, Pittsburgh 33, Pa.
Phone ALlegheny 1-3600

SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS

Made To Withstand High Drilling Speed, Whip And Torsional Strain Of Electric Drills



Drills holes faster — Will not snap off shank or chip points — Outlasts four or five ordinary augers.

THE SALEM TOOL COMPANY SALEM, OHIO, U.S.A.

## Do You Know?

• The U. S. already has all the know-how for launching a small earth satellite, or artificial moon, for a flight of limited duration, it was stated.

• • •

• Scheduled commercial airline flights were started over the once hazardous Arctic between Copenhagen and Los Angeles.

• • •

• Two very important finds were made in Egypt: one of the solar boats intended to carry the Pharaoh Cheops to heaven, and a new step pyramid at Sakkara containing an apparently undisturbed golden alabaster coffin at first believed to be that of Pharaoh Sankhat but which turned out to be empty.

• • •

• The most ancient American skull, at least 12,000 years old and possibly much older, was found near Midland, Texas, in association with ancient fossil animal bones and Folsom points.

• • •

• Remains of a 208-house Arctic village occupied by the vanished Dorset people for a period of at least 2,000 years before the coming of the Thule Eskimos were found north of Hudson Bay in Canada; the houses were large and rectangular, heated by stone indoor fireplaces and lighted by small lamps.

• • •

• Tiny stone tools with microscopic cutting edge, were made by flaking off another small engraving tool called a "burin," and used in quantity by a prehistoric Arctic people to carve on ivory, it was reported.

• • •

• Evidence was found on Cornwallis Island of two early waves of migration from Alaska across the Canadian Arctic to Greenland, the earliest being of hte Dorset people who were followed after a long interval by the Thule Eskimos.

• • •

•Positive confirmation for the existence of man as a hunter of now extinct mammoths in prehistoric Mexico was unearthed near the Texpexpan Man site when fossilized bones of a mammoth were found with the stone weapons which felled the beast.

• • •

• Examination of the Australopithecine sites in South Africa indicated that these ape-men were not tool-makers and were not old enough geologically to be ancestors of the first tool-makers with whom they may have lived contemporaneously.

• • •

• A pleasant cave home with southern exposure in Iraq was explored and determined to be one of the oldest continuously inhabited homes in the world, having been lived in since 70,000 or possibly 150,000 years ago.

• • •

• Artists tools used by a previously unknown people who lived in the Old Stone Age just after the days of Neanderthal Man were found in Shanidar Cave in northern Iraq.

• • •

• A rock shelter occupied nearly 11,000 years ago was found in Illinois and determined to be the oldest dated Indian home east of the Mississippi.

• • •

• An asteroid, Athalia, was rediscovered after having been lost for 50 years.

• • •

• Corn is a native of this hemisphere and has been grown here for at least 60,000 years, study of fossil pollen from 200 feet below Mexico City showed.

• • •

• An ancient puzzle to botanists was solved when it was found that fat is produced in the chloroplast, site of photosynthesis, details of the chloroplast also showed up in photographs made with the electron microscope.

• • •

• A new theory was proposed which suggusted that the process of photosynthesis is essentially a photoelectric current flowing from water through the chlorophyll to disulfide intimately associated with the chlorophyll molecule.

• • •

• A chemical structure was proposed for DNA, or desoxyribonucleic acid, substance essential in the dividing cells involved in life; this points the way to solution of the fundamental problem of how life is handed on.

• • •

• The B vitamins in a grain of wheat were found to be concentrated in a single one of the outer layers.

• • •

• A single electron such as hits a television picture screen has enough energy to keep a single bacterium moving for about three minutes, it was calculated.

• • •

• Four generations of fatherless female desert locuts were produced in the laboratory.

• • •

• A plant absorbs its nutrients from the soil at a point just above the tip of the root, where root hairs are present, a fact revealed when plants were fed radioactive nutrients and then radiograms were made.

• • •

• Natural plant hybridization produced plants, found in north central Tennessee, that do not resemble either parent after many generations.

• • •

• Disease-causing fungi were found to have chitin as the material for the skeleton of their cell walls.

• • •

•Bull frogs were found to show great resistance to sarin, a nerve gas, surviving more than a thousand times the dose that would kill a man.

• • •

• An international expedition marked whales so that more could be learned about the rate of interchange between whale populations of different regions, the age and rate of growth of whales, and the ratio of number killed to total population.

• • •

•Two new cattle diseases, an influenza-like ailment and sporadic bovine encephalomyelitis, were reported to present threats to human health.

• • •

• Carbon of living origin found in Canadian slates of early pre-Cambrian time, or two and a half billion years ago, pushed back the estimated time of life's beginning.

• • •

• A new plant genus with a green and purple flower belonging to the family Umbelliferae was discovered in northeastern Mexico.

• • •

# Here and There in the Coal Industry

● GLEN ALDEN REPORTS BIG BOOST IN EARNINGS. Net earnings of the Glen Alden Corporation for the first six months showed continued improvement over the previous year, President F. O. Case reported to the company's stockholders at a special meeting held in Wilkes Barre recently.

The stockholders' meeting was called to vote on management's proposal for increasing the number of authorized shares from 1,849,393 to 2,500,000. The proposal was approved by a vote of 1,519,748 shares for the resolution and 18,043 shares against.

Mr. Case reported that after providing for depreciation and depletion charges of $986,000, consolidated earnings for the six months totaled $1,695,000, equal to 95 cents a share on 1,774,663 shares outstanding. In comparison, the company reported a loss of $169,000, equal to 9 cents a share, in the corresponding 1954 period after depreciation and depletion charges of $1,164,000.

Sales of anthracite for the six months were reported at 2,208,000 tons compared with 2,578,000 tons for the 6 months of 1954. Realization was down from the previous year, reflecting depressed prices and an excess supply of fine sizes throughout the industry, as well as lower unit volume.

Further improvement in the company's earnings was forecast for the third and fourth quarters of the year. "Prices on anthracite were increased as of July 6," Mr. Case stated. "August should begin to reflect some upturn in coal sales, with September showing definitely improved performance. Thus, the third period should show a reasonable improvement over the second quarter.

POWER UP . . . EARTHMOVING COSTS DOWN!
3 NEW
CAT
WHEEL TRACTORS
...2 NEW
SCRAPERS
Here they are! The new Cat DW21, DW20 and DW15 Wheel Tractors—outstanding power trio destined to set new performance records! With more horsepower to handle bigger loads, faster! With profit-producing increases in rim-pull power! With a specially designed, newly developed, exhaust gas-driven Turbocharger in the DW21 and DW20! And including many other new design features for longer life. Yes, these are the wheel tractors we know will give you lower cost-per-yard than you ever dreamed possible. See these tractors on the following pages . . . and see Caterpillar's entirely new concept in scraper engineering! Contact your Caterpillar Dealer for details.
ANOTHER EXAMPLE OF
CATERPILLAR LEADERSHIP
IN ACTION!
Caterpillar
CATERPILLAR
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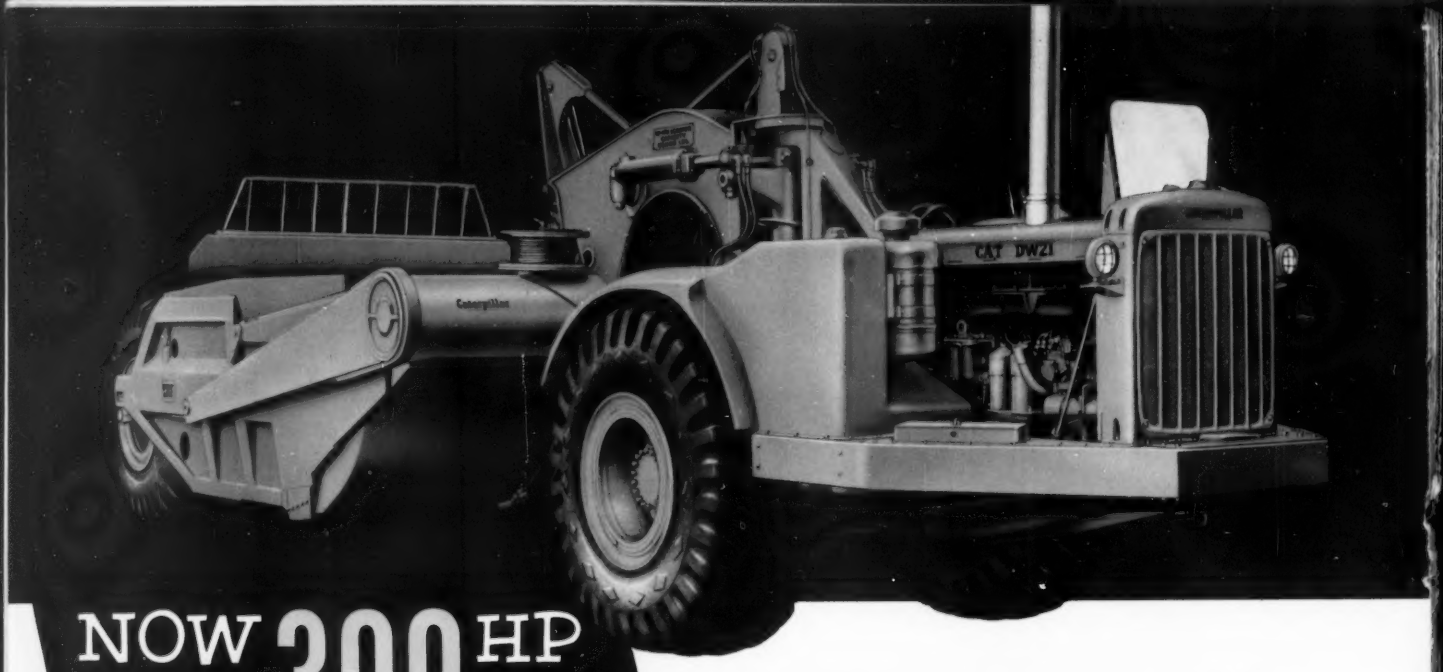
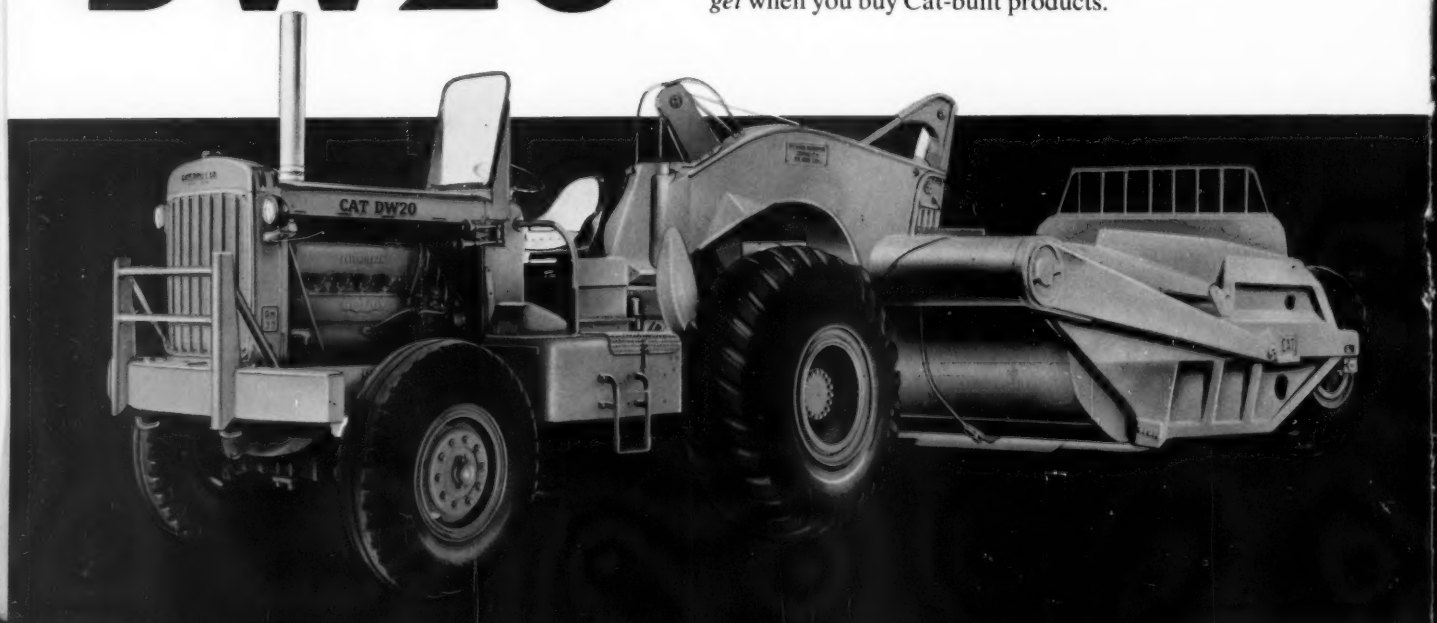



NOW 300 HP

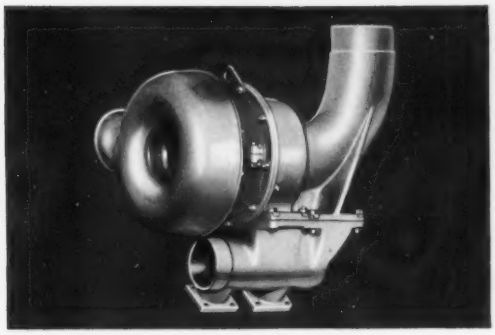
# CAT DW21 DW20

**Dependable power . . . low-cost workability!**

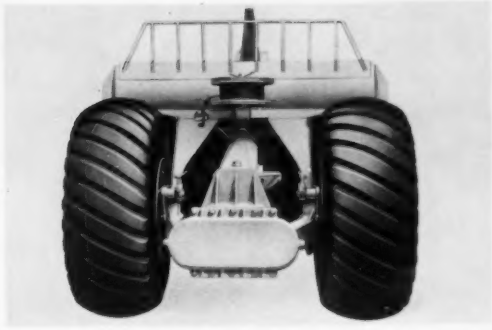
These are just two of the characteristics that have made Cat DW21 and DW20 Wheel Tractors outstanding performers in their class. Now, more powerful than ever, they will set new standards for production . . . for low-cost operation. Under the hoods of both tractors, there's a new 300 HP turbocharged engine bringing you more pounds rimpull . . . lower cost-per-cubic-yard of dirt moved. The new engine is designed for fewer adjustments, better accessibility of parts for easier servicing. Yes, there are many new Caterpillar exclusive features in the new DW21 and DW20 Wheel Tractors . . . advanced features *you expect* from the leading manufacturer of earthmoving equipment . . . time-saving, money-saving features *you get* when you buy Cat-built products.




NOW-186 HP



**NEWLY DESIGNED TURBOCHARGER** . . . pioneered and first used on tractors by Caterpillar. Provides tremendous increase in power. Makes more efficient use of fuel. Runs on exhaust gas. Quiets engine better than any known muffling device.

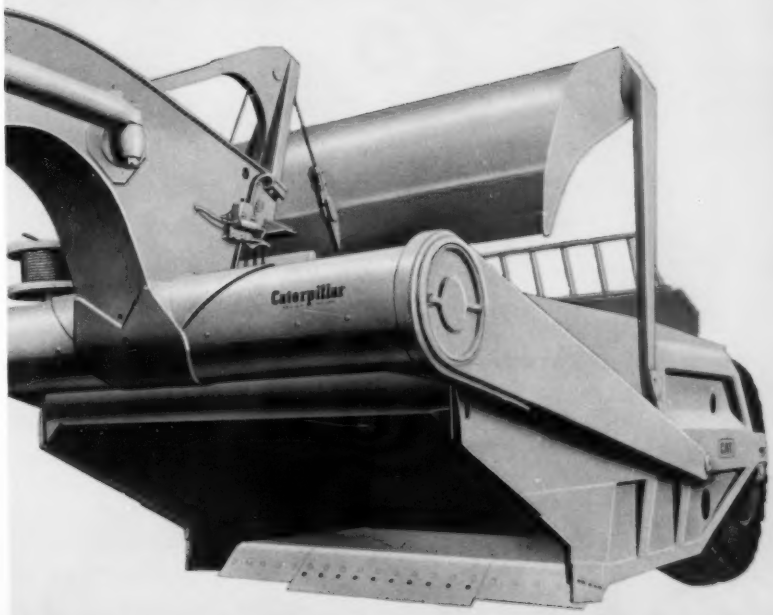


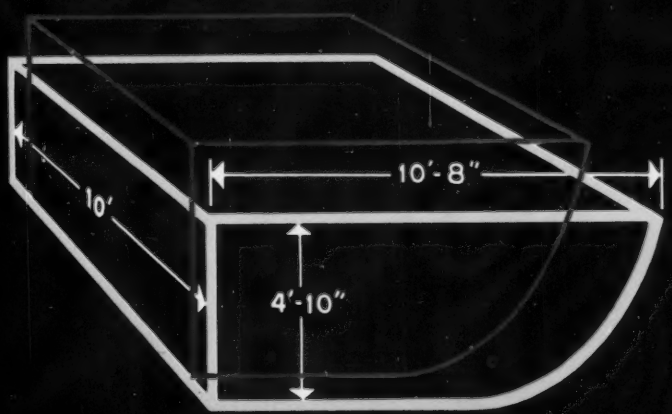
**NEW, WIDER, LOW PRESSURE TIRES** . . . 29.5x29, developed after 3 years of research. Lower inflation pressures carry heavier loads, give better flotation, traction, yet decrease rolling resistance. Wider tire treads take "grouser-like" bite.

# NEW LOWBOWL SCRAPERS

## 25 cu. yd. capacity for bigger loads—faster!

The new No. 470 and No. 456 Cat LOWBOWL Scrapers for the DW21 and DW20 flatten out the load in a bowl that's lower, wider and longer. LOWBOWL Scrapers permit materials to flow freely backwards and sidewards. There's less piling up of the load, less overhead weight, less load resistance. As a result, material is loaded faster throughout the entire loading cycle, and sideboards are unnecessary. Other advantages include higher scraper apron lift for faster ejection, increased scraper ground clearance and a larger scraper push block.




## LOWBOWL vs. OLD BOWL

Diagram at left shows comparative size and shape of LOWBOWL with former Cat Scrapers. Yellow outline shows No. 470 or No. 456 LOWBOWL Scraper; capacity 18 cu. yds., struck; 25 cu. yds., heaped. Green outline shows the former No. 21 or No. 20 Scraper with sideboards; capacity, 18 cu. yds., struck; 23 cu. yds., heaped.

**CATERPILLAR**

NOW-186 HP

# CAT DW15

*Wanted* for its economical performance . . . *used* for its rugged endurance and *proved* for its profitable production, the Cat DW15 Wheel Tractor goes ahead now with an even brighter and more promising future. Its new Cat Engine is bigger. Piston displacement has been increased to 805 cu. in. There's an added bonus in pounds rimpull, too, with increases in every gear so that you can haul the big loads faster. Available for the new DW15, is the time and field-proven No. 27 Cable Control for more positive scraper response and increased life of cable control clutch and brake. Caterpillar Cable Saver is now standard equipment on No. 15 Scrapers.

**We, your Caterpillar Dealer, invite you to get the details on the new, more powerful Caterpillar Wheel Tractors and new, greater capacity Scrapers. We handle the world's most complete line of heavy-duty construction equipment—designed and built by one manufacturer, backed by one dealer organization.**

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CM-5

LOOK TO CATERPILLAR—SEE LEADERSHIP IN ACTION

# The Spring Meeting of the Central Appalachian Section AIME

The Spring Meeting of the Central Appalachian Section AIME was held at the Phoenix Hotel, Lexington, Kentucky, June 10 and 11. The meeting was opened by George O. Tarleton, president, Consolidation Coal Co. (Ky.). Papers presented were: *Prevention of Coal Bumps; Study of Illinois Shales; Roof Bolt Recovery;* and *Experience with the Colmol on 440-V D.C. Power.*

At a luncheon on June 10, Dr. A. A. Potter, president, Bituminous Coal Research, outlined the Importance of Research as a Protection of Coal's Future. He compared expenditures for research in the coal industry with other industries which showed coal trailing far behind.

The banquet the evening of June 10 was addressed by Samuel M. Cassidy, vice president, Pittsburgh Consolidation Coal Co.

Following is the paper by J. S. Mathewa, general superintendent, Compass Coal Co.:

## INTRODUCTION:

When I was asked to present a paper on continuous mining with extensible belt conveyors, it made me feel proud for several reasons. First, I was happy to be with a modern aggressive company that is willing to try out new ideas and mining methods. For this reason I have had an opportunity to obtain a limited amount of practical experience in this type of mining. I also felt it would be a pleasure and a privilege to pass on to the mining industry in general the benefit of my experience. It seems to be an accepted practice in the coal mining industry to freely exchange ideas, and I personally feel that the relations between competing coal companies is more friendly than in any other industry in America. With this thought in mind I would now like to relate to you our experiences, both good and bad, which have manifested themselves in this type of coal mining.

Our original plan of mining was based on the entry and block system. This plan called for 60x60-foot centers. Our mine had been developed with conventional units, but after we acquired our first continuous miner and since we were already seriously considering the acquisition of an extensible belt, we thought it advisable to experiment with a smaller black, because we felt that we would not be able to reach through the pillar resulting from such a system with the miner and bridge conveyor (which is an integral part of the extensible belt). We decided therefore to try a 40x80-foot center plan, and confined our experiment to a small area. This experiment soon proved that the resulting pillar was insufficient to support the overburden, and had we continued this method we probably would have lost a considerable amount of coal. Incidentally, our goal is to obtain 90-95% recovery and at the present time we are recovering about 92%. The presence of numerous clay veins compelled us to abandon the idea of using an extensible belt with the miner in this particular area, and we have since continued mining using the miner with shuttle car haulage.

We then decided to purchase an additional 1CM-2 continuous miner and an extensible belt conveyor for an entirely new section located in an area where clay veins were not excessively numerous. Since the main entries were developed on 60-foot-centers and our previous experience indicated the need for a larger pillar, we decided to drive the continuous miner headings on 60-foot centers and 80 to 100-foot cross cuts. In developing the entry, we turn cross cuts to the right for ventilation and blind cross cuts to the left about 30 feet deep. When the next entry is driven, cross cuts are turned and driven only 30 feet before a connection is made, which is within the reach of the miner.

## OPERATING PROCEDURE:

After developing the first heading 1000 feet long and 17 feet wide, the intermediate sections of the extensible belt were left intact and the miner, belt tail section and belt drive were moved into position to start a second heading. When the second heading was driven up, the miner and the tail section of the extensible belt were moved through the last open cross cut and coupled to the

Left: James B. Benson, Southern Coal Producers Assn.; C. C. Lawall, Asst. to V-Pres., C & O Railroad; C. S. Crouse, University of Kentucky; Mrs. and Mr. W. J. Skewes, Chief Engr., Pocahontas Fuel Co.; Mrs. and Mr. Tarleton, Pres., Consolidation Coal Co., Ky.

Left: Mrs. and Mr. E. K. Newman, Gen. Supt. Mines, International Harvester Co.; Mrs. and Mr. A. D. Sisk, Chief, Dept. Mines, Ky.; Phil Emrath, retired Professor, Mining, University, Ky.; C. W. Davis, Exec. Secy., Big Sandy-Elkhorn Coal Operators Assn.

belt in No. 1 heading. The extensible belt drive was moved back and also coupled to the belt in No. 1 heading, which permitted all the intermediate sections to remain intact in No. 2 heading. With proper planning and with proper supervision, this move may be made in an hour and ten minutes. The pillar to the right and against the gob line was then removed, at the same time we also slabbed 10 feet off the pillar on the left. This was done with the thought in mind that we could reach through the reduced pillar on the next pillar extraction. Despite this slabbing, our 16-foot bridge conveyor was inadequate to reach through the remaining thickness of the pillar. We felt that further slabbing would reduce the pillar thickness to the extent that the pillar would have been inadequate to control our top. We discussed our problem with Joy Manufacturing Co.,

Attending mining men and ladies at a refreshment party at the Phoenix Hotel just before the banquet.

Dr. A. A. Potter, President Bituminous Coal Research, addressed the group at luncheon.

S. M. Cassidy, Vice President, Pittsburgh Consolidation Coal Co., addressed the banquet.

Woods G. Tallman, Asst. Gen. Supt., U. S. Steel Corp., presenting his talk at the sessions.

and requested a 28-foot bridge conveyor which would permit us to extract the entire block without slabbing. The 28-foot bridge conveyor was not immediately available and Joy furnished us with a 20-foot bridge which did not eliminate slabbing, but did permit us to reduce our slabbing to 8 feet and give us complete extraction.

In removing the pillar on the right, we split through near the gob end of the block, leaving a 6-foot wing which we recover as the miner retreats, leaving only a very small wing-like stump on the corner. The roof bolting is done during the operation of the miner however, in recovering the 6-fooot wing, it is not necessary to roof bolt. The intermediate sections are added as needed while the belt is in operation.

VENTILATION:

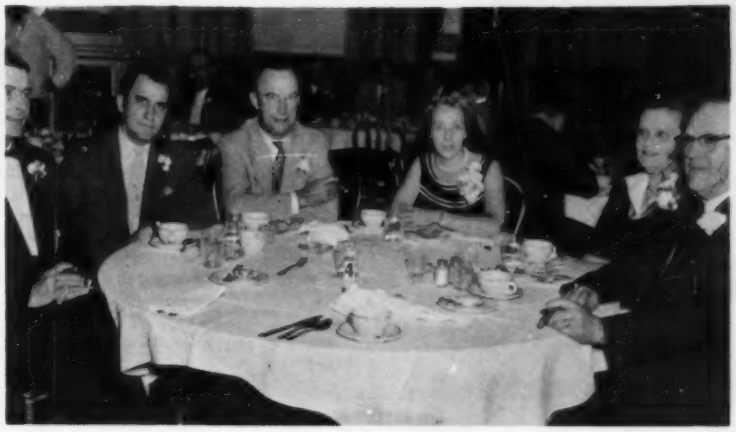
The fresh air is coursed over the extensible belt to the face and returned through the previously developed heading to the gob line. Due to the fire resistant (neoprene) construction of the belt, we were able to secure the necessary permits from the W. Va. Department of Mines, for this type ventilation.

WORKING CREW AND DUTIES:

The crew consists of a foreman, a miner operator, two roof bolt men, a mechanic, and two utility men. We also carry a third shift mechanic, which means our total crew for each of the two shifts of operation is an average of 7½ men. I would like to relate to you the duties of each of these men.

*Foreman.* A production unit of this kind is either producing coal or not producing coal. There is no in-between phase. It, therefore, is important to head this unit with a foreman who can think and plan ahead. He should spend most of his time at or near the face and never leave this location unless a breakdown elsewhere necessitates his leaving the area.

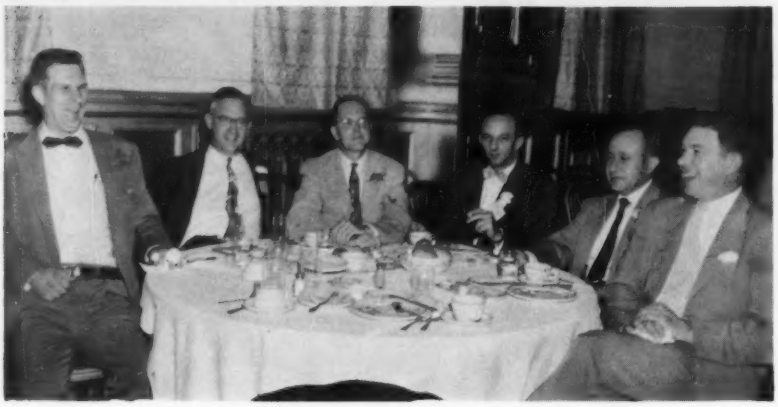
*Miner Operator.* In selecting the man to operate the continuous miner we feel that he should be mechani-



**Left: R. W. Wotring, Supt., Olga Coal Co.; J. S. Mathews, Div. Supt., Compass Coal Co.; Mr. and Mrs. R. C. Craft, Chief Engr.; and Mrs. and Mr. R. L. Black, Consolidation Coal Co. (Ky.).**

**Left: Charles Holland and Mrs. Holland, Virginia Polytech Inst.; V. C. Smith, of V. C. Smith Management; G. R. Spindler, School of Mines, W. Va. University; Mrs. and Mr. K. M. Allen, French Coal Co.**

**Left: Mr. and Mrs. R. W. Storey, Chief Engr.; Mr. and Mrs. M. E. Prunty, Director of Safety; Mrs. and Mr. J. C. Wilson, Engr., all with the Consolidation Coal Co. (Ky.).**



Left: Robert Dale Greer, Asst. Mine Supt., Inland Steel Co.; Ralph Hippard, Asst. District Mgr., Joy Mfg. Co.; E. M. Morris, Chief Eng., Clinchfield Coal Corp.; Stephen Canonico, Pres. Compass Coal Co.; Jack A. Simon, Illinois State Geological Survey; E. H. Roberts, Mine Eng., Inland Steel Co.

Left: N. D. Howard, Manager, Elkhorn Coal Corp.; A. H. Mandt, Vice-President, Stephens Elkhorn Fuel Co.; Mr. and Mrs. George E. Evans, Jr., President, Evans Elkhorn Coal Co; Mr. and Mrs. E. R. Bradle, Eng. and C. H. Corbin, Chief Eng., Beaver Creek Coal Co.; L. B. Brashear, President, Stephens Elkhorn Coal Co.

Left: Mrs. H. M. Gallagher; Prof. E. M. Spokes, Dept. Mining & Metallurgy, University of Kentucky; Mrs. W. H. Roll; G. W. Lokin, Prod. Mgr., Inland Steel Co.; W. H. Roll, Exec. Secy., Dept. of Mines, Kentucky.

cally inclined, agile in his movements, one who readily understands instructions, and one who is somewhat of a natural leader. He must be especially alert in his power of observation since he must constantly check the face, the discharge conveyor, and the progress of the two roof bolters .The miner operator must not move up his machine until the bolters have completed their cycle.

*Mechanic.* The mechanic must be qualified as an electrician in addition to his mechanical qualifications. He must be the type that is readily trained to operate new types of equipment. This man staggers both the continuous miner operator and if necessary the roof bolters. He also leads and assists the crew in extending or shortening the extensible belt conveyor.

*Roof Bolters.* The bolt men must drill and install the necessary bolts in approximately 2½ minutes, otherwise this phase of operation will interefere with the miner's prime duty of producing coal.

Our roof bolting pattern was adopted to meet the requirements of the W. Va. Department of Mines, and basically is as follows: While the miner is making an 18" cut across the face, each bolter drills a vertical hole and completely installs the ⅝x 60" bolt. The miner now moves up 18" and one of the bolters installs a bolt 18 inches in from the rib line of bolts and on a 25° angle, toward the center of the heading. Normally this is the only bolt installed until the miner moves again. When the miner again moves, the opposite bolter installs his bolt, again an angle bolt. The miner now moves up an additional 18 inches and each bolter installs a vertical bolt. This completes one cycle of bolting. In this pattern the maximum distance between any two bolts is 54". The above pattern is a minimum standard, but additional bolts are used when adverse top conditions are encountered.

*Utility Men.* The main duty of the two utility men is to assist the mechanic in both extending and shortening the extensible belt conveyor. This operation must be performed

with speed and precision so as to reduce down time to a minimum. It requires an average of 3½ minutes to add a 100-foot section of belt and approximately 12 minutes to remove a similar length of belt. These men also install the intermediate belt sections near the tailpiece, hang the necessary line curtain, move up supplies, do all necessary rock dusting and clean up spillage. The utility men also stagger the roof bolters during the lunch period.

PERFORMANCE OF MINER:

The performance of the miner is to a great extent dependent on adequate power supply. Our source of power is a 200 KW Westinghouse Rotary Converter which transmits DC power over 1,750,000 circular mils of conductors to within 1000 feet of the working face and over a 1,000,000 circular mils cable to the junction box of the miner.

The connected HP of the miner is as follows:

Two—100 HP Cutting Motors
Two—7½ HP Conveyor Motors
One—15 HP Pump motor for hydraulic system

Two—10 HP Tramming Motors
One—26 HP Motor for roof drills.

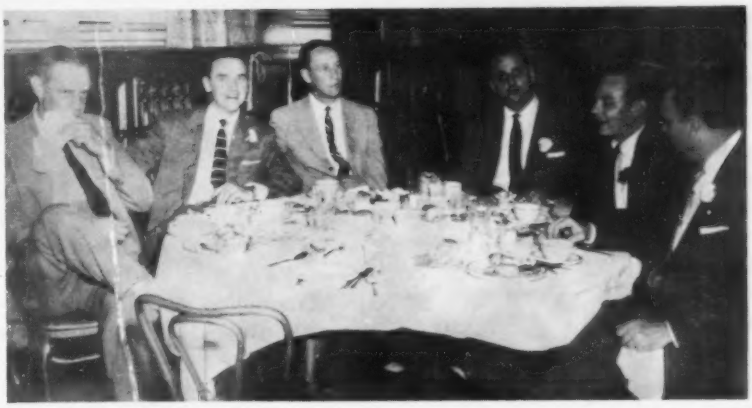
The miner makes an 18" sump at the bottom and rips upward to the top, cutting a swath 18"x42" wide. He then returns his cutter head to the bottom and offsets 42" to a new position. This phase consumes 35 seconds. This cycle is repeated five and sometimes six times to produce an entry 17 to 18 feet wide. The miner now moves up 18" and again goes through the above cycles. If the miner works initally from right to left, then on the next face cut he works from left to right.

PERFORMANCE OF EXTENSIBLE BELT:

The drive or headpiece of the extensible belt conveyor is cat-mounted and self-propelled, and is equipped with a 25 HP motor which drives the belt. A 15 HP motor is also located in the drive unit. This motor powers the hydraulic system on the drive which is used to add rubber belting to the "cluster" and also powers the cats. The tailpiece is also cat-mounted and self-propelled and utilizes a 15 HP motor. In addition to the above motors, a 3 HP motor is used to drive the bridge conveyor.

The bridge conveyor is simply a belt conveyor which slides on the tailpiece of the extensible belt conveyor and is flexibly attached to the discharge boom of the continuous miner. The bridge conveyor will slide a maximum of 7 feet on the tailpiece before it becomes necessary to extend the belt itself. The bridge conveyor also swivels at the tailpiece which permits a turn of 45° towards either rib. This action, together with the 45° flexibility of the discharge boom of the continuous miner enables us to drive places at right angles to the center line of our entry.

The extensible belt conveyor operates at a belt speed of 445 feet per minute. The bridge conveyor belt travels at 485 feet per minute. The extensible belt conveyor was designed for a total length of 1000 feet and I am glad to say that we have had no trouble in extending the belt up to 1000 feet. Each piece of rubber belting is 30" wide and 100 feet long. This rubber is flame-resistant due to its neoprene construction. Further detailed information on the extensible belt conveyor is deemed unnecessary due to the fact that most everyone has seen this conveyor



**Left: Watson Storey, Chief Engineer, Gary Mine, U. S. Steel Corp.; R. Rabler, Jeffrey Mfg. Co.; Walter Steen, Public Relations Manager, Gary Mine, U. S. Steel Corp.; John S. Shroeder, Chief Engr., Gary-Lynch Div., U. S. Steel Corp.,; Wm. Bassett, Asst. to Pres., West Kentucky Coal Co.; Bob Gerdetz, Div. Mgr., Cardox Corp.**

**Left: J. H. Mosgrove, Safety Dir., Big Sandy-Elkhorn Coal Operators Assn.; E. D. Kiser, C & O RR; Mrs. A. M. Ayers; V. W. Buys, Mine Safety Appliances Co.; Mrs. J. H. Mosgrove; Oscar J. Harm, Mine Safety Appliances Co; A. M. Ayers, Gen. Supt., Russell Fork Coal Co.**

either in operation, at the Coal Show, or in advertising pamphlets and magazines.

Elsewhere in this paper we told you how long it took to add and remove rubber, we also told you the time it took to move from one developing entry back to an entry ready for pillaring, but did not give you the time necessary to move and set up from a pillar job back to a starting position for a new entry. This involves a move of 120 feet for the head and tailpiece and the miner, as well as the miner junction box. Our average time for this work is one hour and thirty minutes.

JOY FILM

PRODUCTION:

Everyone here should be interested in the "pay-off"; namely, production data. This information is simply tabulated with no comments.

Production started March 11, 1955. Production March 11, 1955 to May 31, 1955—51,253 tons. Highest tonnage per shift—740 tons. Lowest tonnage per shift—54 tons. Average production for above period—479 tons per shift. Maximum advance per shift —151 feet. Average advance per shift —102 feet.

SCREENING PERCENTAGES:

Again we will tabulate these results without comment. The tabulation below represents an average of five separate samples from conventional mining machines, and an average of eight samples from the continuous miner.

| | Conventional | Cont. Miner |
|---|---|---|
| Plus 2" | 30.10 | 31.50 |
| 2x⅜" | 39.10 | 43.20 |
| ⅜x0" | 30.80 | 25.30 |

CONCLUSIONS:

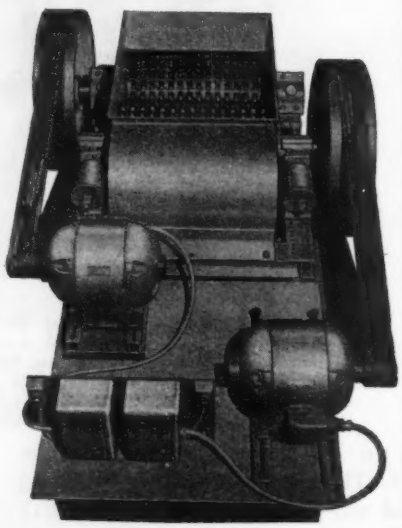
We at Compass Coal Company are faced in most areas with a soft bottom which when wet is almost impossible to travel with heavy mining equipment. Therefore the more equipment traveling over this soft bottom, the more possible delays are experienced. This equipment bogs down, resulting in lost operating time due to immobilizing the equipment and also results in mechanical and electrical failures caused from exposing the equipment to such rugged duty. Production cost is further increased by the necessity of building expensive bridges over mucky bottom. By using an extensible belt conveyor, most of the delay time due to soft bottom has been eliminated.

In my opinion the combined use of both continuous miners and extensible belt conveyors is the nearest real approach to actual continuous mining which is known today. I have no doubt that continued ingenuity will develop even better machines and mining methods than are in use today.

I wish to thank this organization for the opportunity to be here today and to exchange ideas with other men in our industry.

SCOTTDALE MACHINE, FOUNDRY & CONSTRUCTION CO.
DEPT. CM BOX 51 SCOTTDALE, PA.

DOUBLE ROLL
COAL CRUSHER



EFFICIENT . . . produces a more uniform product!

ECONOMICAL . . . uses less power!

BOOSTS . . . sales—profits!

NO. 63 SPECIAL — 2 Motor Drive — Produces a Product ¾" to 8". Equipped with Two Grooved Flywheels. (No Gears)

Efficient and practical the shredding action of the crusher's tooth studded double rolls turns out a more consistent product. Quality produced forged steel tooth gears, welded steel base, bronze bushed journal bearings, welded steel hopper and grooved flywheels.

NEW AND REBUILT
STORAGE BATTERY LOCOMOTIVES
Any Size Any Track Gauge
GREENSBURG MACHINE CO.
Greensburg Pennsylvania

# Special Entertainment at the Coal Show

Over-all View of the Party

Cleveland Rock Drill Division officials in charge of the entertainment. Left: B. R. Morgan, Gen. Mgr.; Spencer Bowman, Chief Engr., Mining Research; Joe Bogan, Public Relations Mgr.; Robert McChain, Gen. Sales Mgr.

The Cleveland Rock Drill Division, The Letourneau - Westinghouse and George E. Failing Co., all Westinghouse Air Brake Co. subsidiaries entertained a selected group of visitors to the coal show. A cocktail party and buffet supper was given at the Hollenden Hotel on Tuesday evening, May 17.

Lloyd G. Fitzgerald, Mining Explosives Engineer, U. S. Bureau of Mines (center) urged the 155 men of Crozer Coal and Land Company at Lynco, W. Va., to use the information obtained during a ten weeks course in accident prevention recently completed at the Lynco Plant. In the picture left to right are: Wirt Hatfield, Jr., union member; H. J. Sloman, Washington, D. C., safety education and training officer for the U. S. Bureau of Mines; Fitzgerald; Ted Belcher, chairman, safety committee UMWA, Local Union 7692; Raymond Belcher, mine committeeman. Sloman is presenting the U. S. Bureau of Mines Certificate to Ted Belcher, indicating the members of Local Union 7692 have participated 100 per cent in the accident prevention course.

# HIGHWALL AUGERING AT THE NATALIE COAL CO.

**Having formerly stripped the Redstone seam of coal on both sides of the Monongahela River at Elizabeth, Pennsylvania, the Natalie Coal Company is now recovering coal left in highwall with one of the new McCarthy coal recovery drills. That new model was designed for operation in narrow strip pits or for facing-off hillsides for auger mining. It uses six-foot long augers ranging from 16 to 42 inches in diameter, is self-propelled from hole to hole. The over-all length is 18 feet and it is 6 feet wide, driven by a four-cylinder General Motors Corp. diesel engine, equipped with Cotta transmission, 14-inch Rockford clutch and R 71-36 speed reducer. Four double-acting hydraulic cylinder leveling jacks keep the machine at its proper level at all times. A jib-type crane with 11-foot highlift for handling augers is bolted onto side of the frame. The machine is moved to the next hole by two hydraulic cylinders. Four captive rollers support it on two 16-foot long skids which raise and lower with the machine.**

**The particular unit used by the Natalie Coal Company is the Model A-10, using 36-inch augers. The Redstone seam in that area rolls considerably and contains numerous clay veins which must be watched to keep the coal as clean as possible. Holes up to 160 feet deep have been drilled, with the average hole running 120 feet deep.**

# YOUR NEW EQUIPMENT DEPARTMENT

Model SSM Transporter Trailer Dump

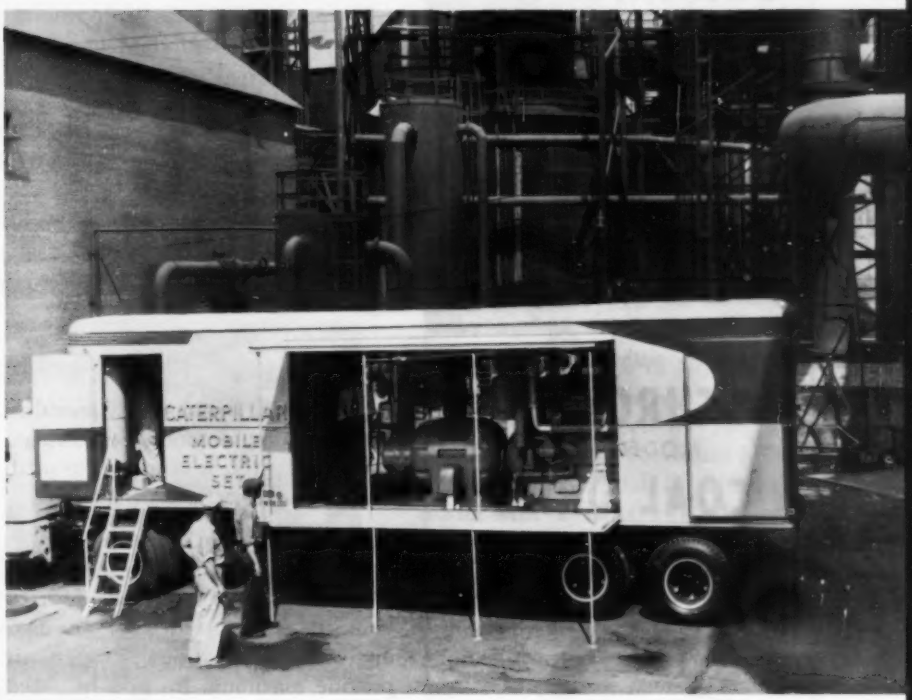
A new single axle treiler dump, designed for operation with single rear axle tractors, is announced by Galion Allsteel Body Company, Galion, Ohio.

Known as Model SSM Transporter, the new unit is said to be ideal for materials hauling use, especially in localities where weight laws allow high individual axle weight limits combined with relatively low gross weight. Exceptional stability both on the highway and in dump position is an outstanding feature, the manufacturer says.

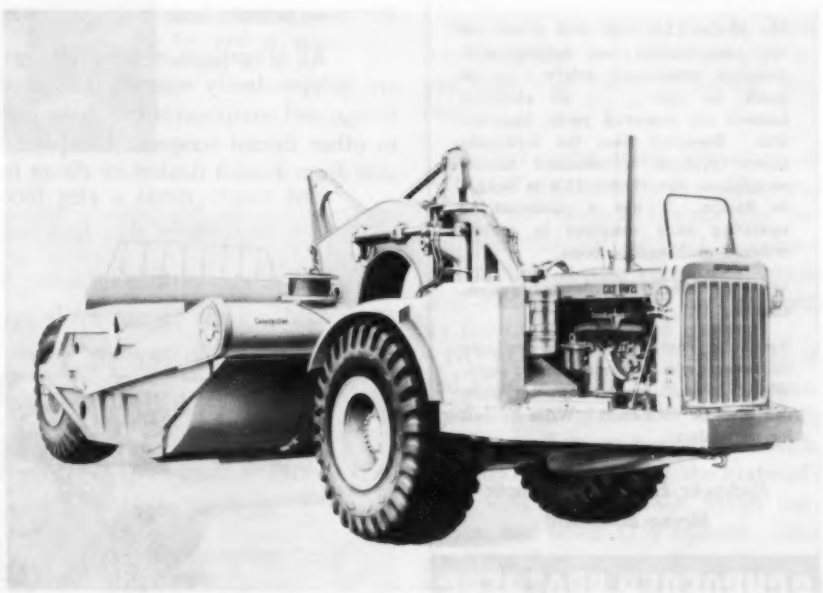
Model SSM Transporters, available in body lengths from 16 to 20 ft. and with payload capacities of 10 to 20 cubic yards are equipped with rear mounted Model 77142 Duo-Ram hoists with 18-ton capacity.

According to the manufacturer, construction of the Model SSM combines maximum strength with minimum weight. Ten-gauge high-resistance steel is used throughout the body. Closely spaced 4" channel crossmembers are welded to 6" I-beam longitudinals. The fabricated steel chassis is fitted with Stabl-ride or semi-elliptic leaf spring suspension. A full selection of brake types, axle capacities, tires and optional equipment is offered.

Galion Allsteel builds a complete line of trailer dumps, with capacities from 15 to 50 tons. Said to be one of the world's largest manufacturers of dump bodies and hoists, the company operates plants in Galion, Mansfield and Cardington, Ohio.

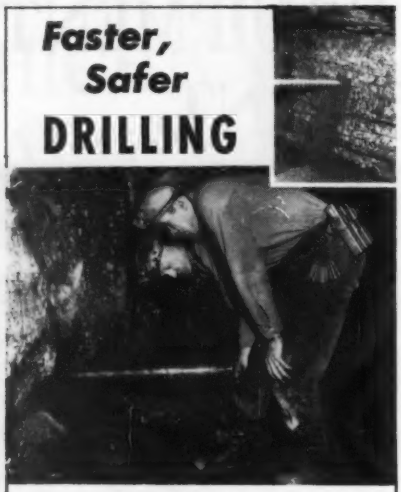



**SAFETY OF BLAST FURNACE DEPENDED ON THIS CATERPILLAR EMERGENCY POWER SET,** Fourth of July week-end when the utility company in Midland, Pa. cut off service to steel company in order to make line alterations. Water-circulating pumps, which keep the blast furnace from "burning out," are motor-driven and were kept in operation by this unit to prevent possible damages up to a million dollars for Crucible Steel Company of America.



**The new Caterpillar DW21 (Series C) Tractor with No. 470 Scraper features a redesigned diesel engine rated at 300 HP at 1800 RPM. The scraper is wider and longer and has the new "lowbowl" design for easier and more economical loading of materials. Caterpillar Tractor Co. also introduced another new rubber-tired tractor, the DW20 (Series E).**

**Faster, Safer DRILLING**

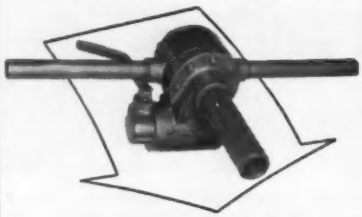


with the

**SCHROEDER**

MODEL 12-B

**COAL DRILL**



***Light-Weight! Hydraulic!***

**The Model 12-B Coal Drill gives you safe, dependable fast drilling with complete operational safety . . . no spark, no kick . . . all electrical hazards are removed yards from the drill. Powered from the hydraulic power systems of standard mining equipment, the Model 12-B is simple in design. It has a minimum of operating parts resulting in greatly reduced maintenance costs.**

**Write or call for details and demonstration.**

Hydraulic Power Units are available for several non-hydraulic mining units. Wheel or skid mounted power units can also be furnished. Write or call for particulars!

*Hydraulic, Electric & Pneumatic Mining Equipment*

**SCHROEDER BROTHERS**

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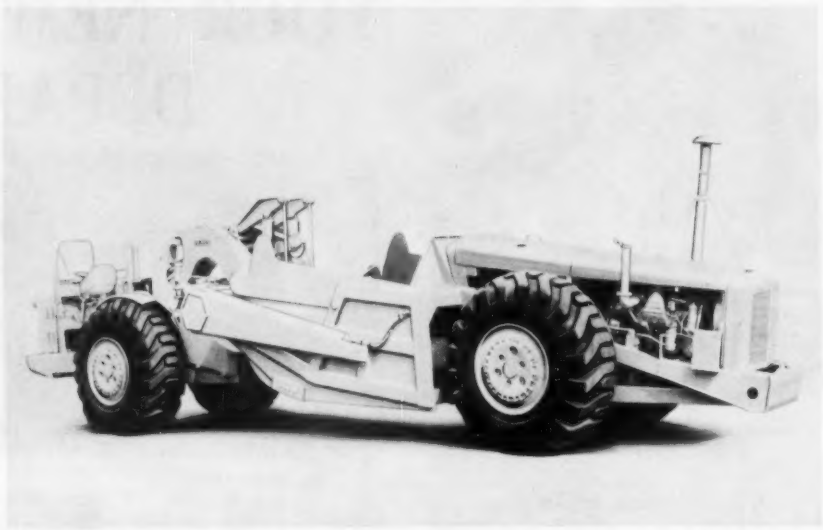
PITTSBURGH 1, PA.

EXPRESS 1-1571

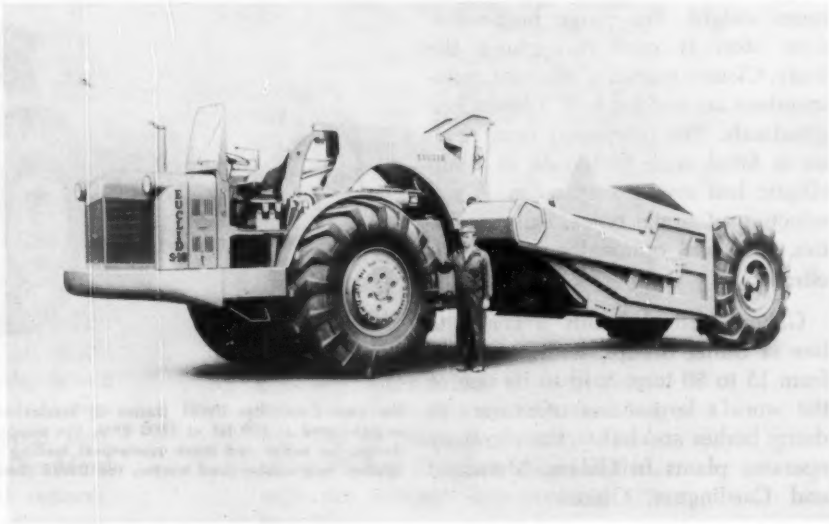



**Euclid Division of General Motors Corp. is now in production on two** new overhung engine-type scrapers. Each has a struck capacity of 18 cubic yards and utilizes Allison Torqmatic Drive consisting of torque converters and semi-automatic transmission.

Torqmatic Drive completely eliminated clutching and permits the operator to change from one speed range to another under full power. It provides a constant, smooth flow of power to the drive wheels and automatically provides the power needed for varying conditions of loading, hauling, and dumping. Both of these new scrapers are equipped with No-Spin differentials to provide maximum traction by directing full torque to the drive wheel with the best footing.

The Model S-18 is powered by a 300 HP engine and has 27.00x33 tires. The twin-Power Model TS-18 Scraper has two 194 HP engines—one driving the tractor wheels and the other providing power to the rear wheels. Full 90° steer permits both models to make 180° turns in 35 feet or less.

All operations of bowl lift, apron and ejector on these 18-yard scrapers are independently controlled by means of hydraulic lever action— the same design and components that have proved their efficiency and ease of operation in other Euclid scrapers. Complete information and specifications are available from Euclid dealers or direct from Euclid at Cleveland 17, Ohio.




**Bucyrus 200W**—With 125' boom Diesel Electric Cooper-Bessemer Engine, 6 yd. bucket. New

NOW at

Richard N. Welch

Fred H. Bentzel, Clarksburg Branch Manager of Beckwith Machinery Company, has announced the recent appointment of Richard N. Welch as Sales Representative in five counties of West Virginia and two counties in Maryland.

Mr. Welch has had over eight years' experience in the heavy equipment field; six of which have been with Caterpillar dealer organizations. Prior to his affiliation with Beckwith's Sales Department he acted as Assistant to the Service Manager for two years.

Workman applying NO-ROT with Monroe Rufferseal.

An improved type of NO-ROT, reinforcing fabric for use with roof coating, is announced by The Monroe Company, Inc., Cleveland 6, Ohio.

The new material is said to be made with a substantially wider weave than was previously employed. This facilitates its use in economical "one coat" roof repair jobs. Unlike ordinary roofing cloth, which must be applied over roof cement or roof coating, NO-ROT can now be laid right on the old roof. Coating is then applied and flows through to bind NO-ROT firmly to the surface below as well as to place a protective coat over it.

NO-ROT, according to The Monroe Company, is made especially for use with that firm's Rufferseal roof coating.

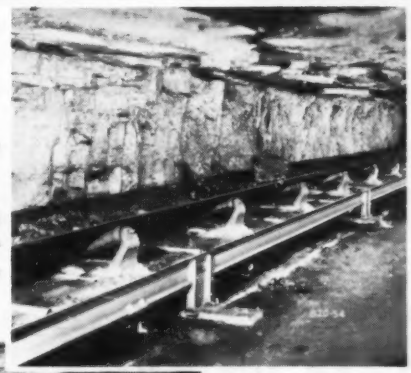
Another outstanding advantage of NO-ROT is increased weight and body. This results in the material laying perfectly flat without bagginess or rippling. It also eliminates wrinkling during application and prevents its floating in the roof coating.

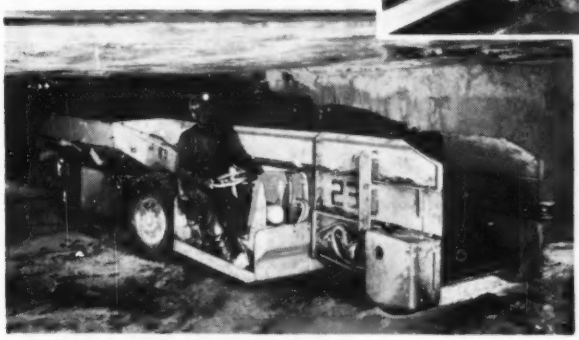
NO-ROT is available in 4-6-12-36 and 45-inch widths. The latter is manufactured in giant size 300-ft. rolls which unroll at any temperature without sticking. Because of the material's light weight, these rolls weigh only 17 lbs. and cover 11½ squares. Their use logically results in fewer laps and less handling.

NO-ROT is described in detail in a recently published bulletin — No. 1061. Copies may be secured by writing The Monroe Company, Inc., 1703 Quebec Ave., Cleveland 6, Ohio.


*by "buggy" and by belt*

**JEFFREY IS YOUR BEST BUY**





Jeffrey 80-A Belt Conveyor for heavy duty main line service.

Jeffrey MT66 Shuttle Car, built in basic heights 30" to 42".

From coal face to mine tipple, coal gets a faster, more economical ride on Jeffrey shuttle cars and belt conveyors.

Jeffrey builds a complete line of powerful shuttle cars in 24" to 54" basic heights. They are designed for rugged service, high capacity and easy steering under every mine condition.

For belt conveying, Jeffrey manufactures three types of sturdy head sections and three types of strong frames to give nine basic combinations of underground conveyors. One of these is suited to your exact needs for high-tonnage handling at low cost.

Write Mining Sales Division, The Jeffrey Manufacturing Co., Columbus 16, Ohio.

JEFFREY

MINING • CONVEYING • PROCESSING EQUIPMENT
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

Femco, Inc. is introducing a new microphone designed for use with communication and automation systems for industry.

The new instrument known as Femco Microphone, MI-2630 Series, is particularly suited to all applications where the level of ambient noise is a factor or where dust or moisture is prevalent. It is offered to the electronics field as a superior close-talking microphone for use with almost any radio or wired-audio system and is available in large or small quantities with or without the Femco nameplate.

The frequency characteristic is flatter than most, with a slight rise toward the high end and a fairly abrupt drop off after 3500 cycles. The carbon element used was selected as the best available on the basis of field tests by Femco engineers. Other features include a snap-action switch of finest quality operated through a rubber diaphragm to a push button; a large eyelet securely encased in bakelite for ease of hanging; and a thick high-impact-resistant bakelite shell not less than ¼" thick at all stress points. All internal parts are completely sealed off against moisture and dust and the exterior molding has been designed to fit the hand comfortably.

The standard switch comes equipped with two normally open contacts and one normally closed contact sufficient for almost any switching need. Various switches, numbers of conductors, wiring patterns and plugs are available for almost any requirement. A Koiled Kord extendable to six feet or more is optional if desired. Overall dimensions are 6"x2¼"x1¾".

For additional information write manufacturer: Femco, Inc., Irwin, Pennsylvania. Request data: Femco Microphone.

**Bucyrus 200W**—With 125' boom Diesel Electric Cooper-Bessemer Engine, 6 yd. bucket. New in 1949.
**Northwest 80D**—2 yd., Series 8400.
**LaFrance Tandem Coal Truck**—20-ton capacity.
**Northwest Model 6**—1¾ yd., new in 1953.
**P & H 955 Dragline**—3yd., 90' boom with 17000 Cat Engine. Serial No. 8000.
**Marion 7200**—5 yd., 135' boom. Walker, Fairbanks Morse, Cummins Diesel. Excellent operating condition.
**Marion 40A**—3 yd., 85' boom. Cummins engine, excellent.
**Caterpillar D8 Dozer 2U11200.**
**Hordzogg 30" High Wall Auger**—Complete, 100 h.p. Ford I. Motor, 100' auger, 2 cutting heads, good as new.
**Belknop Coal Washer**—125 TPH. Can be fitted to size you require.
**100 KW Diesel MG Set**—250 volts.
**Clarkson Loaders**—Low pedestal track type, Excellent condition, right price.
**Jeffrey Coal Drills**—On rubber tires, 74 BR, hydraulic type.
**Goodman G15 Room Conveyors**—With 300' pan line.
**Joy Shuttle Cars**—Low type and 5-SC high cars.
**Joy 14BU Loaders and 8BU Loaders.**
**Steel Mine Cars**—End gate type, 42" ga. 3½ ton, 43" high.
**Goodman 512 Cutters and Jeffrey 35 L Cutters.**
**2—Double Desk Vibrating Screens**—3' wide, 10' long.
**1—20 BU Joy Loader.**
**1—Drag Conveyor**—3'x40'.
**Joy 30" MTB Belt Conveyor**—60 h.p. motor and magnatex controls.

**WE HAVE CUSTOMERS FOR YOUR**
**High Wall Coil Augers—McCarthy & Compton**

**T. L. (Les) Simpson**
MACHINERY AGENT
1200 Woodbourne Ave.
Pittsburgh 26, Pa.
Phone LEhigh 12254

**FOR SALE**

Electric Motors, AC and DC, New and Rebuilt, all sizes for immediate shipment.
MEYER BROTHERS
**Phone 701** **Phillipsburg, Pa.**

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Handle more cars better — spend less to install & maintain with Foster Relayers. "Open-stock" shipments, all sections 12# thru 175#. Switch Materials, Track items.

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**L.B. FOSTER CO.**
PITTSBURGH 30 NEW YORK 7
CHICAGO 4 HOUSTON 2 LOS ANGELES 5

# COAL AUGER FOR SALE

McCarthy Coal Auger Drill,
GMC Diesel — Hydraulic Jacks
24" Head — 120' Augers
20" Head — 130' Augers
New Style — Drills to bottom of coal
Worked 75 hrs. — New Condition

**FRANK SWABB**
**EQUIPMENT COMPANY, INC.**
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. Gladstone 5-3658

*NOW at*
**BECKWITH MACHINERY COMPANY**

**BUNDED BUY**

## USED EQUIPMENT

**Item 455-WV143 Caterpillar Model D7 Tractor** mounted with LaPlant Choate Angledozer and LeTorneau Double Drum Cable Control. Installed new master clutch brake. Rebushed steering control lever and relined cable control cone. Machine is in good running condition. F.O.B. Clarksburg, W. Va. "BUY AND TRY" ..... **$5500.00**

**Item 355-P327 Caterpillar D4-T4 Cable Hylift** with 1 cu. yd. bucket. Sprockets, rollers, idlers and track are good. Bellows seals were replaced. Engines have been tuned and hylift clutch and winch adjusted. Machine is in good operating condition. F.O.B. Pittsburgh, Pa. ..... **$3000.00**

**Item 355-P322 Caterpillar D8 Tractor,** mounted with LeTorneau Rear Double Drum Control Unit and LaPlant-Choate Straight Blade. Equipped with crankcase guard and electric starting system. Machine is in good operating condition. Sprockets, idlers and rollers are good. Tracks fair. F.O.B. Pittsburgh, Pa. ..... **$4500.00**

**Item 853-WV101 Allis - Chalmers Model HD10W Diesel Tractor,** mounted with Baker Hydraulic Operated Straight Bulldozer. Equipped with crankcase guard, front pull hook and track roller guards. F.O.B. Clarksburg, W. Va. "BUY AND TRY" ..... **$3200.00**

**Item 954-C164 International T20 Gasoline Tractor** with Bucyrus-Erie Angledozer. F.O.B. Clearfield, Pa. "BUY AND TRY" ..... **$1200.00**

**Item 455-P329 General Model 307 ¾ Yd. Shovel,** powered by General Motors Diesel. Machine has been placed in good operating condition. Adjusted steering clutches and brakes; replaced crowd booster band and relined crowd friction; replaced dipper door; tuned up and repaired GM engine. F.O.B. Pittsburgh, Pa. ..... **$8500.00**

**Item 954-WV126 P & H Model 255A ¾ Yd. Shovel** with 6 Cylinder Waukeshaw Gas Engine. Engine is completely rebuilt; overhauled master clutch. Repaired radiator, generator, starter and carburetor. Relined swing bands and installed new swing pinion, bushings and washers. Complete overhaul of all hydraulic cylinders and controls. F.O.B. Clarksburg, W. Va. "BUY AND TRY" ..... **$8750.00**

**BECKWITH MACHINERY COMPANY**

**6550 Hamilton Avenue, Pittsburgh, Pa.**
**361-369 Congress St., Bradford, Pa.**
**Old Town Road, Clearfield, Pa.**
**1356 E. 12th Street, Erie, Pa.**
**E. Broadway, Farrell, Pa.**
**Buckhannon Pike, W. Va. Route 20 (So.), Clarksburg, West Va.**

# Tonsils Removed $1.98

**WOULD YOU TRUST YOUR THROAT TO A DOCTOR WHO ADVERTISED LIKE THIS? CERTAINLY NOT!**
**THEN WHY TRUST YOUR BUSINESS TO ANYONE WHO FEATURES PRICE ALONE, ON EQUIPMENT THEY PROBABLY DIDN'T EVER OWN.**
**BUY FROM THE LARGEST STOCK OF THE B E S T IN MINING EQUIPMENT EAST OF THE MISSISSIPPI.**

**WE OWN WHAT WE ADVERTISE**

**All types of Joy Cutters, Loaders, Shuttle Cars, Cat Trucks, Belt Conveyors, Chain Conveyors, etc. Includes:**

## JOY EQUIPMENT—Rebuilt

1—Joy 3 JCM Continuous Miner, 34" high.
2—Joy 14 BU, 7 BE Loaders, 10 H.P head motors.
1—Joy 14 BU, Low Pedestal Loader, 38J head motors.
1—Joy 12 BU, 9E Loader, 26 high. Rebuit.
1—Joy 8 BU type 11E Loader.
1—Joy 11 BU, high capacity Loader.
4—Joy 32E9 Shuttle Cars.
8—Joy 32D Battery Cars.
2—Joy 42E13 Shuttle Cars.
4—Joy 42D Shuttle Cars.
1—Joy T1 Standard Cat Truck.
2—Joy T-2-5 Cat Trucks, AC.
2—Joy Ladel MTB, 30" Belt Conveyors, 1000 Ft.
6—Joy Ladel 12" Chain Conveyors, 300 Ft.
2—Joy PL11-14 Elevators on Rubber.
1—Joy PL11-5E Elevators.
1—Joy PL11-7E Elevators.
4—Joy 11B Cutting Machines, like new.
4—Joy 7B Cutting Machines, rebuilt.

## LOCOMOTIVES

1—Jeffrey 15-ton, type MH-110, 250 volt, 48" ga.
3—Jeffrey, 10-ton, type MH-78, 42" and 44" ga.
2—Jeffrey 15-ton, motor units, 115 H.P. complete with trucks.
2—Jeffrey 8-ton, type MH-110, 42", 44" and 48" ga.
12—Jeffrey 6-ton, type MH-88, 42", 44" and 48" ga.
2—Jeffrey 4-ton, type MH-96, 42" and 48" ga.
3—G.-E. 4-ton, type 825 locomotives.
10—G.-E. 6-ton, type 801, 803, 821 locomotives, 42", 44" and 48" ga.
1—G.-E. 8-ton, type 822 locomotive, 44" ga.
3—G.-E. 10-ton, type 809 locomotives, 42", 44" and 48" ga.
8—Goodman type 33, 6-ton, 44" and 48" ga.
2—Goodman, 8-ton, type 32A, 44" and 48" ga.
1—Goodman 10-ton, type 34B, 48" ga.
2—Goodman 13-ton, type 29A, 44" and 48" ga.
6—Westinghouse, type 902, 4-ton.
2—Westinghouse, type 904, 6-ton.
1—Westinghouse, type 907, 10-ton
6—Gasoline and diesel locomotives, 4 to 20 tons.

## TIPPLE EQUIPMENT

2—Cedar Rapids portable super tandem screening plants.
1—Allis Chalmers, 5'x14' Rippflo vibrator.
1—4'x10' Robbins Gyrex Vibrator.
2—Double Roll Crushers..
3—Single Roll Crushers.
Feeders, Drag Conveyors and Loading Booms.

## CUTTING MACHINES

1—Jeffrey 29U on rubber.
1—Jeffrey 29C on cats.
6—Jeffrey 35L's, like new.
12—Jeffrey 35B and 35BB.
2—Jeffrey 29B's on track.
2—Jeffrey 29L, track mounted.
4—Jeffrey 29C, track mounted.
4—Baby Goodman 212's, rebuilt.
3—Goodman 312 Cutters, 18" high.
3—Goodman 512 EJ Cutters.
15—Goodman 12AA and 112AA.
2—Goodman 724 Slabbers.
2—Goodman 224 Slabbers.

## LOADING MACHINES

6—Joy Loaders, all types.
1—Jeffrey 61 CLR on rubber, 26".
2—Jeffrey 43L Shortwall Loaders.
3—Jeffrey L-500 Loaders.
2—Goodman 360 Loaders.
4—Meyers Whaley No. 3 Automat Loaders.

## CONVEYORS

10—Jeffrey 61 HG Face Conveyors.
12—Jeffrey 61 AM Room Conveyors, 300'.
4—61 EW Elevating Conveyors.
2—61 WH 15" Room Conveyors.
2—Joy 30" Belt Conveyors.
4 Joy Ladel UN-17 Shakers.
10—Goodman G-12½ and G-15 Shakers.

## DIESEL PLANTS AND CONVERTERS

1—International 50 KW, DC.
1—75 KW. G.M.C., 6-71 DC.
2—Superior 100 KW, DC.
1—Cummins, 125 KW, DC.
1—Allis Chalmers 200 KVA, AC (Natural Gas).
2—100 KW, G.-E. TCC-6 Rotaries.
2—150 KW, G.-E. HCC-6 Rotaries.
2—200KW, G.-E. HCC-6 Rotaries.
1—200 KW, Allis Chalmers Rotary.
1—300 KW, Westinghouse.
1—400 KW, G.-E. Rotary.
(All the above with 2300/4000-6900/13000 volt transformers.)
2—150 KW, MG Sets, G.-E. and Westinghouse.
1—200 KW MG Sets, Westinghouse.
1—300 KW, MG Set, Westinghouse.

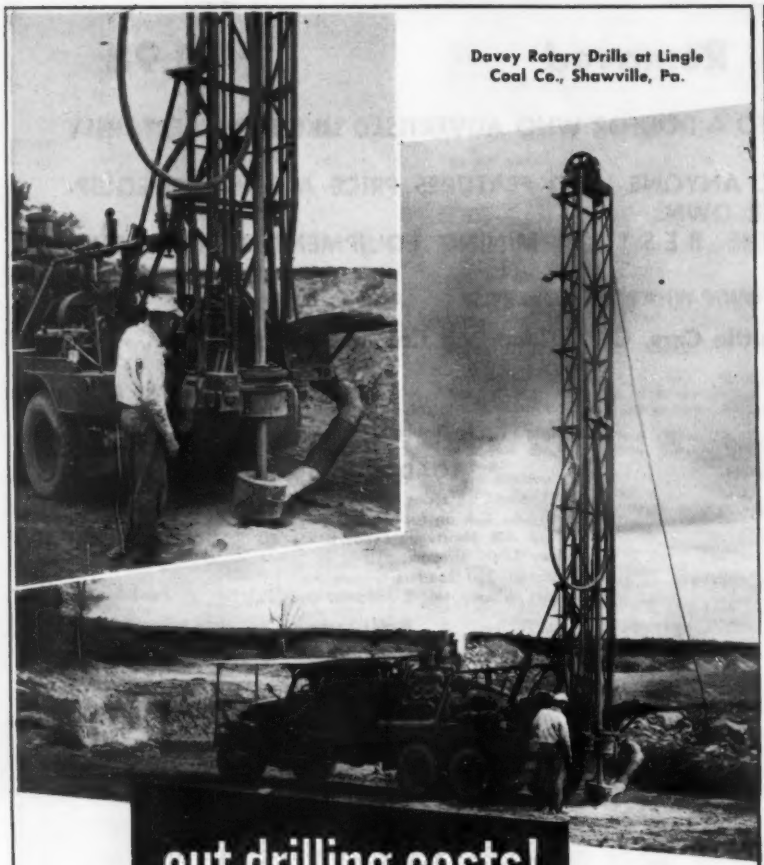
## ROCK DUSTERS

1—MSA hi pressure on rubber.
1—MSA hi pressure on skids.
1—MSA low pressure room duster
1—MSA hi pressure track mounted.
2—Canton Dustributors, lo-pressure.
1—Canton hi pressure, track mounted.

## MISCELLANEOUS

400 Mine Cars, Drop Bottom and End Dump. All Gauges.
2—Brown Fayro HKL and HGD Car Spotters.
1—12-ton Differential Slate Larry.
4—Overhead Bridge Cranes.
1—Hardscog Horizontal Drill.
1—Kanawha Hillside Dump.
1—16-Yd. Draglline Bucket.
5—Low Vein Water Cars.
Incline hoists, 25 to 50 H.P.
Machine tools for mine shops.
200 tons rails, all sizes.
30 tons copper trolley and feeder.
20 electric drills CP 572.
300 Transformers from 1 to 2000 KVA, 110 to 13000 primary volts.
300 Electric motors, 3 to 200 H.P.
Thousands of other items.

IT DOESN'T COST—IT PAYS TO BUY FROM **J. T. FISH & COMPANY** Logan, West Virginia Phone 2825



Davey Rotary Drills at Lingle Coal Co., Shawville, Pa.

cut drilling costs!

DAVEY

ROTARY DRILLS

For faster, more economical drilling . . . increased coal production at lower costs, leading strip operators rely on Davey. Suitable for mounting on any make of truck, Davey Rotary Drills move fast between blast holes . . . are ideal for low cost core drilling with air . . . easy to set in drilling position.

Daveys are available in 6 different models—air blast, mud pump, or combination types. Rated capacities to 2,000 ft. Outstanding features include choice of power take-off or separate power unit operation, automatic hydraulic feed, hydraulic pull down, heavy-duty rotary table, rugged tubular box-type mast . . .

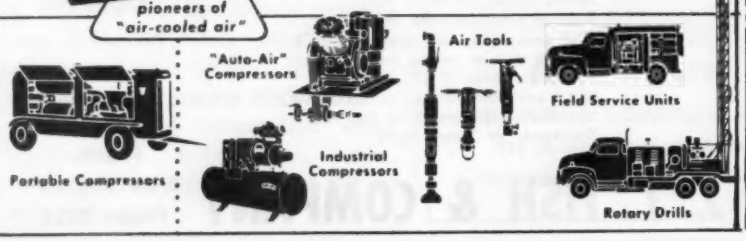
AA-1697

*Write for full details!*

DAVEY

pioneers of "air-cooled air"

DAVEY COMPRESSOR CO. • KENT, OHIO





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# Long Life Facts!

THESE GREAT MONUMENTS BUILT BY THE PHARAOHS OF EGYPT HAVE WITHSTOOD THE RAVAGES OF SAND AND WEATHER FOR OVER 50 CENTURIES.

FUEL INJECTOR
## 85 STORIES HIGH

MICROSCOPES CAPABLE OF MAGNIFYING A 5 INCH OBJECT TO THE HEIGHT OF THE EMPIRE STATE BUILDING ARE USED TO EXAMINE THE METALS USED IN *CAT*® FUEL INJECTION PARTS.

CLEARANCE BETWEEN THE PLUNGER AND BARREL OF *CAT* FUEL INJECTION PUMP IS 1/180 THE THICKNESS OF A HUMAN HAIR. PUMPS ARE INTERCHANGEABLE WITHOUT ADJUSTMENT. SUPER-SMOOTH FINISHES OF SURFACES GIVE THOUSANDS OF EXTRA TROUBLE-FREE HOURS.

*RAZOR SHARP* WIPING EDGES OF *CAT-BUILT* FUEL INJECTION PUMP PLUNGERS, METER FUEL PRECISELY FOR LOWER FUEL CONSUMPTION.

REMEMBER: *LONG LIFE* IS A FEATURE YOU BUY IN *EVERY* GENUINE CAT PART!

*PARTS YOU CAN TRUST!*

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361-369 CONGRESS ST.
BRADFORD, PA.

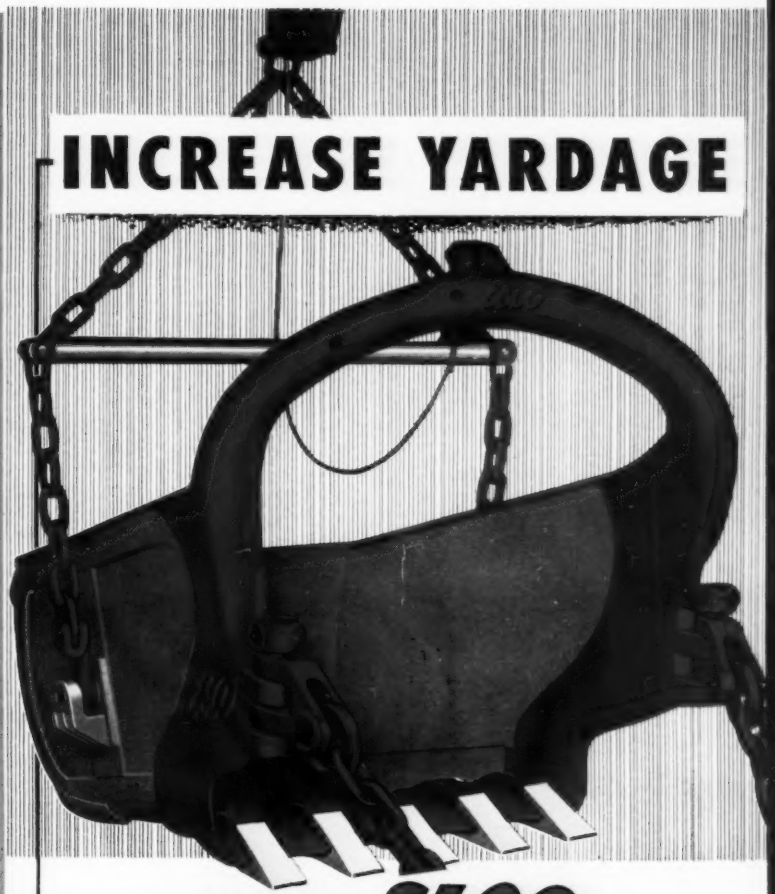
1356 E. 12TH STREET
ERIE, PA.

OLD TOWN ROAD
CLEARFIELD, PA.

E. BROADWAY
FARRELL, PA.

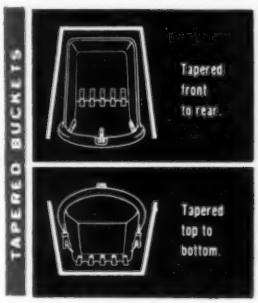
BUCKHANNON PIKE, W. VA., ROUTE 20, (SO.)
CLARKSBURG, WEST VIRGINIA

# INCREASE YARDAGE



## with NEW *ESCO*

## TAPERED DRAGLINE BUCKETS




***DIG FASTER***—Bucket tapers from very wide front opening to proportionally smaller rear area so a greater portion of the load is carried in the front of the bucket—fewer drag lengths are required to fill. Wide throat, high tubular arch and small lip permits unrestricted flow of material—less line pull is needed.

***DUMP CLEANER - FASTER***—Taper from front to rear and from bottom to top allows load to drop free of the bucket. Height of box-sectioned tubular arch is equal to the width of the bucket at the hitches—load dumps clear of arch.

***REDUCE DOWNTIME***—Tapered design reduces loading and dumping friction—cuts wear to an absolute minimum. An extremely high strength-weight ratio is made possible by the use of alloy steel castings and all-welded construction.

*ESCO* tapered buckets have been proved by thousands of hours of operation all over the world.

## KANAWA STEEL & EQUIPMENT CO.

P. O. Box 2361, Charleston 1, W. Virginia

P. O. Box 687, Weirton, W. Virginia

Allis-Chalmers HD-21 works at KRISTIANSON & JOHNSON COAL CO., Lanse.

# When you think of mining equipment... think of *Highway* first!

Leading coal companies will tell you that it pays to standardize on equipment sold, serviced and guaranteed by Highway.

Next time you have a production problem, call your Highway representative. He will be glad to show you how equipment like the Allis-Chalmers HD-21 can cut costs and boost production.

AA-1510

ALLIS-CHALMERS • GENERAL MOTORS DIESEL ENGINES
LIMA SHOVELS, CRANES, DRAGLINES • BAKER • THOR
POWER-PACK CONVEYORS • GAR WOOD • ERIE BINS
MICHIGAN TRACTOR SHOVELS AND EXCAVATOR-CRANES
MASTER • INTERNATIONAL VIBRO-TAMPERS • JAEGER

*Highway*

**EQUIPMENT COMPANY**

**6465 Hamilton Ave. • Pittsburgh 6, Pa.**